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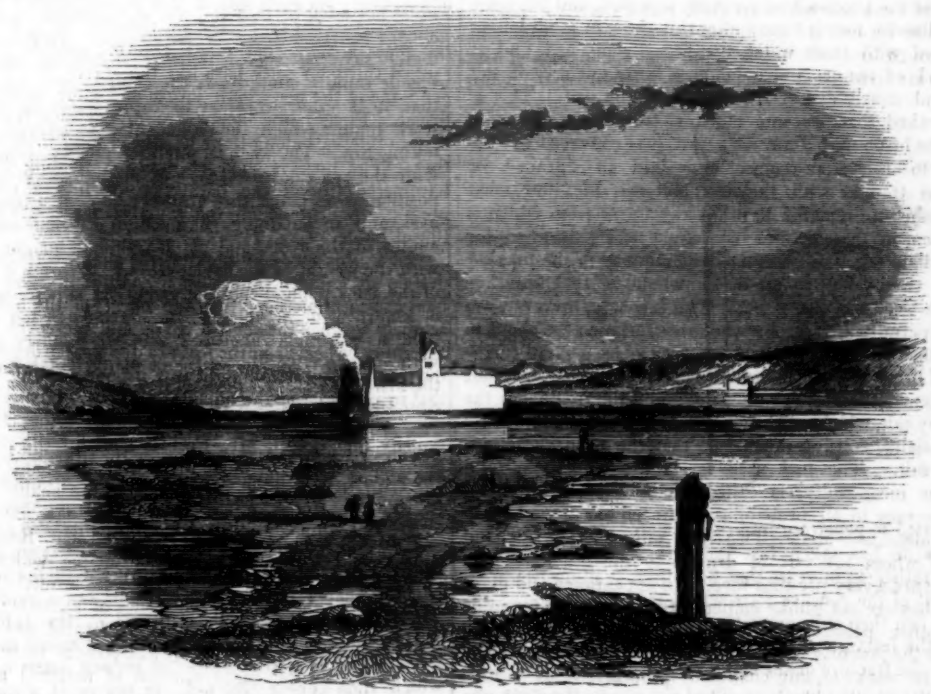
MANUFACTURE OF SALT IN SCOTLAND.



[A Salt-Pan on the Forth.]

A GENERAL description of the different modes of obtaining salt, practised in various parts of the world, having been already given in our pages,* we propose to devote the present article to a short but more particular notice of the process of obtaining that useful article from salt-water by evaporation produced through the agency of artificial heat. In Scotland this method has been pursued from a very remote period, and to an extent probably unequalled in any other country. Records are still in existence attesting the endowment of abbeys with salt-pans, some of them referring to a period as early as the twelfth century: the abbey of Holyrood, for instance, was endowed by David I. with the salt-pan of Airth, near the head of the Frith of Forth, along the shores of which noble river the chief salt-pans are still found. The mode of manufacture is said to have been greatly improved during the reign of Mary, Queen of Scotland, by the attendants whom Mary brought with her from France, and who received in consequence an exclusive privilege for the production of the commodity, which was continued until the reign of Charles II. At two different periods the Scottish salt manufacture has received great injury; the first, at the time of the Union, when the duties levied in both countries were equalised (the ruins of salt-pans scattered along the whole coast of Fife yet attest the effects of that measure); and the second, when the duties were entirely repealed, a few years ago, in consequence of which many important works were relinquished. We have now to describe the mode of manufacture.

Near the shore, in a suitable spot, is erected a long and low building, divided into two parts—the one called the fire-house, intended to shelter the workmen and to contain the fuel required; the other, known as the boiling-house, fitted for the reception of the pan in which the brine is contained during evaporation, and for the furnace below. The pan is of an oblong form, commonly measuring about fifteen feet in length, twelve in breadth, and in depth about fifteen inches. The material is generally wrought-iron, but the sides are sometimes of lead, as the iron is apt to oxidize. A walk five or six feet in breadth extends on each side of the pan for the accommodation of the workmen who assist in the operations. The roof of the saltern (as the building is called), which is partly open to allow of the escape of the steam, is fastened with pegs of wood, as iron nails would quickly be destroyed by the vapour. Near to the saltern is a shed containing the cistern, which is fixed at such a height as to allow the salt-water it holds to run through pipes into the pan. The cistern is filled by means of machinery, which pumps up the sea-water from a well communicating by long pipes with a pool or 'lump' in the shore. It is an object with the workmen to draw the water from a point as far below the surface as possible, as they then find it more impregnated with salt, and therefore requiring less trouble, and involving less expense for firing in the process of evaporation. When the sea-water in the cistern has had sufficient time to settle, and deposit its mud and sand, it is allowed to flow into the pan (or pans, for there is generally in the large works a range of them extending on both sides of the cistern), and a strong fire is now lighted in the furnace beneath. As soon as the fluid is lukewarm, it is

* Vol. iv., p. 66.

clarified, either by mixing the white of three or four eggs with two or three gallons of water, and pouring the mixture into the pan, or by means of the blood of sheep or oxen. As the water gets still more heated and approaches to boiling, a frothy scum appears, which is collected into little vessels fixed one at each corner of the pan: after this process, the water speedily becomes clear. Having boiled about four hours, crystals appear on the surface, and the amount of water is seen to be greatly lessened: the pan is now refilled with fresh sea-water, allowed to heat, clarified, and cleared from the scum as before, the whole of the process being exactly repeated, and the same a third and a fourth time: after this the pan is no longer supplied with fresh water, the fire is slackened, and, at the end of ten or twelve hours, a large quantity of salt is found nearly dry at the bottom of the pan. This is now raked together into one or two heaps, in order that the brine may drain off; next it is conveyed in barrows to the store-rooms, and laid in 'drabs,' or wooden troughs with shelving bottoms, to allow what little moisture remains to drain away, and from which it is taken, in three or four days' time, perfectly fitted for immediate use. Each pan of salt requires in the making about twenty-four hours in the whole, so that only five pans a week can be made. The furnaces, however, are never permitted to cool: when the workmen are about to leave on the Saturday afternoon, they place a small quantity of brine in the pan, which is left to simmer, without attendance, till Monday morning; and the product is the Sunday salt, which is in such great request in some parts of Scotland, as being much finer than the ordinary 'every-day' salt. The fuel used is small coal, which, by a curious incongruity, is called wood: the origin of this custom may in all probability be traced to a period when wood alone was used. Two men attend each salt-pan, one of whom is a sort of drudge to the other. These people are a very peculiar race. In appearance and manners they are not unlike colliers, whom too they resemble in another point, their former state of slavery. Till within the last fifty years or so, the salters were transferred with the works on any change of property, in as positive a manner as the black population in our own colonies prior to the late changes, or as the American slaves at this moment. Their freedom was obtained by an application of the proprietors themselves, a rare and honourable action; but so little did the salters themselves appreciate it, that they exclaimed against the whole affair as nothing more than a petty attempt on the part of the proprietors to relieve themselves of a trifling burden to which they were liable on the marriage of a salter or coalman! We conclude with observing that a great proportion of the salt thus prepared is carried by women, chiefly the wives and other relatives of the salters, to Edinburgh.

USES AND MANUFACTURE OF SHIPS' ANCHORS.—No. II.

In the former article on the subject of the anchor we endeavoured to give an idea of the different forms given to the instrument, and of the mode in which it is used at sea. We have still to give a few particulars respecting the mode of manufacture

There is perhaps no kind of smith's work more gigantic than that of anchor-making: the large masses of iron employed and the mechanical force necessary for welding the several parts together render the employment of powerful apparatus indispensable. The finest establishment for anchor-making at present is, we believe, the Royal Dockyard at Woolwich, where the bellows and the hammers are all worked by steam-power, and where various improvements in the manufacture have been introduced. But we shall find it convenient to speak of the more common modes of manufacture by manual labour.

The several parts of an anchor are made separately, and then welded together: the shank, the arms, the palms, the ring, &c., are attached to each other after they have had the necessary forms given to them. The most ponderous part of an anchor is the shank, or perpendicular bar, and as this is, in a large anchor, nineteen feet long and ten or twelve inches thick, it would be impracticable to form it out of one piece of iron; it is therefore built up of a great number of pieces welded together into one solid mass. The general form in which this is done, except when the improvements of Mr. Pering and Lieut. Rodgers are adopted, is as follows:—Four iron bars of comparatively small diameter are laid together in the form of a square; on each side of this square smaller bars are laid, perhaps ten or twelve in number, so as to give to the mass a somewhat circular form: outside these are ranged thirty or forty bars like the staves of a barrel, so as to make the mass both larger and more nearly cylindrical. Finally iron hoops are driven over the bars at certain intervals along their length, to bind them all together. The mass is then heated to a welding heat, and hammered till all the bars combine into a compound mass of iron, of which the separate pieces are not distinguishable.

But in this mode of making the shank certain serious defects are found. The mass is so thick and the separate bars are so numerous, that the effect of the hammering scarcely reaches the central bars; and moreover the outside must be heated in the fire to a destructive degree before the centre can be brought to a proper welding heat; so that in many cases the outside only is perfectly welded, the inner portions being left nearly in their original state. To remedy this defect, Mr. Pering, clerk of the cheque at Plymouth, devised a mode of making the shank of broad bars equalling the whole diameter of the shank, laid flat one on another, welded at two heatings and bound with iron hoops. Still more recently Lieut. Rodgers has devised a hollow shank, on a principle which is well understood by engineers, and which is beautifully shown in nature by the form of the bones of animals; that is, that if a given weight of material be formed into a hollow column or pillar, the column will possess more strength than if it had the same amount of material and were made solid: the greater diameter of the hollow column increases the resistance to fracture, without the weight being increased. This is only one of the numerous improvements which Lieut. Rodgers has introduced in the form of the anchor.

It may reasonably be supposed that the heat required to bring such large masses of iron to a welding* state must be very intense, and that the removal of the masses from the fire to the anvil must be done speedily to prevent loss of heat. On the ground of the anchor-smith's shop a brickwork hearth is erected six or seven feet square, and at the back of the hearth is erected a strong brick wall, faced with fire-stone at the part likely to be exposed to the fiercest heat. At some distance above the hearth is a kind of dome with a chimney in the centre through which the smoke from the fire escapes. The fire is built up on the hearth in a singular manner, the coals being ranged round so as to form a hollow oven. In the first place a layer of coals is spread evenly on the hearth; then some large cinders are ranged round in a circle, and this circle is gradually carried upwards and inclined inwards until it meets at the top. The construction of a boy's grotto with oyster-shells would not be a bad mode of illustrating this. A door or opening is left in one

* The property of welding is possessed by iron alone. It is simply this:—Two pieces of iron are heated to a certain point, so as to soften the texture; they are removed from the fire, laid on an anvil, and hammered, when, after some time, they are found to have become as perfectly united as if they originally formed one piece. The principle is much the same as that by which we are enabled to join two pieces of sealing-wax, except that in the latter case no hammering is required. It has been a disputed point whether or not platinum possesses the property of welding; but we believe it is now considered not to possess it. All other metals are united by solder.

side of the coal-made oven, into which the end of the mass of iron is introduced. As the shank is, as we have said, sometimes as much as nineteen feet in length, only so much of it is heated at once as can be hammered or welded by the men before it gets cold; and this amount of its length is just able to be contained in the coal-oven.

When the several bars of which the shank is to be formed are ranged in their proper places and secured by hoops, the whole mass is suspended from a crane, which has such a facility of motion, that one man can turn the crane towards the forge and introduce one end of the shank into the fire. As soon as this is done, the orifice round the shank is filled up with pieces of coal, so that the iron is completely surrounded by blazing coals on every side: here it remains for a space of time varying from half an hour to an hour, according to circumstances, a fierce heat being maintained the whole time by means of immense bellows. These bellows are (except where steam-power is employed) worked by the same gang of men, eight or ten in number, who afterwards forge the iron when hot. The bellows, situated on the opposite side of the vertical wall to that where the fire-place is erected, are two in number, and resemble the common domestic bellows rather than those employed by the generality of smiths, that is, wind is forced out only at the downward pressure of the upper boards. A chain rises from the handle of these bellows, and is attached to one end of a lever in such a way as to enable two or more men, by working the lever to and fro, to set the bellows in action. While some of the men are at work at the lever in order to raise the upper board, by which air gains admission into the bellows, others are standing aloft so as to get on the upper board when it is raised, and by their weight to press it down again: one bellows is being worked upwards while the other is being pressed down, so that the men mount from one to the other alternately. This rude mode of working the bellows is scarcely worthy of the mechanical ingenuity of the present day, and it is no wonder that steam-power has been partially substituted for it. A small hole lined with iron penetrates the brick wall close to where the fire is kindled, and into this hole the nozzles of both pairs of bellows are introduced, so that the wind is impelled directly into the fire. If the coals forming the hollow oven become burnt through in any place to the external air, the fireman immediately covers the spot with new and damp coals, so as to confine the heat entirely to the central parts which immediately surround the metal.

The shank of the anchor is turned over several times while in the oven, in order to become equally heated in every part, and when thoroughly heated through to the welding temperature, it is drawn from the oven, and the crane from which it has all along been suspended is moved round so as to bring the heated part over a solid block of iron lying on the ground, which serves as an anvil. The men now arrange themselves in regular order: one man, who acts as foreman, looks on and points with a wand to the particular spot where the blows are to be directed; one man grasps an iron bar attached to the remote end of the shank, by which he is enabled to turn it round as occasion may require; and the other men, generally either six or eight in number, arrange themselves nearly in a circle, and with heavy hammers, weighing sixteen or eighteen pounds each, strike the red-hot iron. They all strike in succession and with the greatest regularity, and all strike on the same spot, until the foreman points to a new one. The hammers have steel faces, and are furnished with very long handles; they are wielded over the head and shoulder at full arm's length, and fall on the iron with powerful effect. When the iron has so far lost its heat as to be incapable of further welding, several iron pins are driven in in a curious way. The foreman takes a pin (a sort of thick nail without a head) in a cleft stick, and places its point close to the iron, which, though not hot enough for welding, is still soft and yielding: a few powerful blows with the hammer drives the cold hard nail into the soft and yielding iron: the effect of this is to condense, harden, and secure the various pieces of iron together more effectually.

When the end of the shank has been thus welded to the proper form, it is again put into the oven, which is prepared to receive it, and which has now a hole broken through in the opposite side to that at which the end enters. The object of this is, that the part already welded may be thrust out beyond the reach of the fire, and another portion exposed to the action of the heat. When this portion has attained a welding heat, it is removed from the fire by the same means as before, and hammered on the anvil till it has assumed the proper form and proper degree of compactness. These successive heatings and hammerings are continued until the whole length of the shank has been thus treated; and afterwards the shank is hammered again to make the surface smooth and even, and to fill up any little pores or apertures which may exist in the surface, and which, if left unremedied, might form lodgments for sea-water, and thus become rusted.

But powerful as is the effect of the long continued beating by six or eight heavy hammers, yet the consolidation is not so completely effected as by means of one enormous hammer or ram, called a Hercules. This nearly resembles the ram or monkey used in pile-driving, for laying a foundation for the piers of bridges, &c. The ram is a mass of iron weighing about five hundred pounds, and capable of sliding up and down in a kind of groove. A strong rope is fixed to the top of it, and to this rope are spliced the ends of six or eight others. As many men are employed as there are ropes, and they conjointly draw up the ram to a height of seven or eight feet; then letting it go, it falls with a powerful effect on an anvil placed beneath it. This anvil is so situated that the heated end of the shank may, by turning round the crank from which it is suspended, be brought immediately upon the anvil. It is considered that the comparatively few blows given by this ram are more effective than the numerous blows given by six or eight hammers. In the government establishments where steam-power is employed, an enormous tilt-hammer, weighing several tons, is employed for this purpose.

The shank has generally a somewhat circular or octagonal form given to it; and the two ends have to be so cut as to form scarps or grooves for receiving the other parts of the anchor. These grooves are made by cutting away some of the metal while still hot, with steel chisels, and then perfecting the shape by means of stamps or punches. All this is done with comparative ease while the iron is hot and yielding.

This description of the processes by which the shank or long shaft of the anchor is formed, will apply to most of the other parts, except that all the latter are of much smaller size. The arms are being made at another forge, and by a separate set of men, while the shank is forming. They are shaped in the various parts according to the required pattern, and generally have a curvature given to them, though in some instances they are made quite straight. A scarfing or groove is made at the thicker end, to correspond with that at the lower end of the shank; and when these two grooved ends have been heated to the proper point, they are laid together and welded on the anvil. But in some anchors the arm is not united to the lower end of the shank in this manner; an alteration was introduced by Mr. Pering, in which the lower end of the shank is made to bend round to meet the arms, so that the transition from one to the other is a curve, and not a sharp angle, at the same time that there is no actual joint at the spot separating the shank from the arms. In Lieutenant Rodgers's anchors nearly all

the parts are formed in a manner peculiar to himself, and displaying great ingenuity.

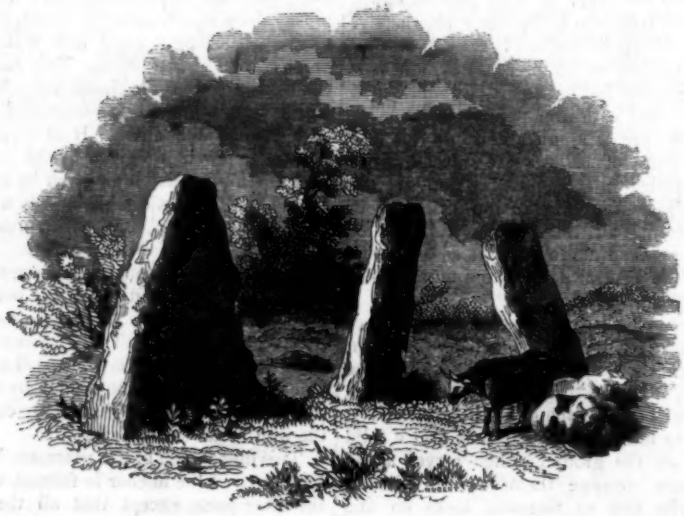
By whatever way the arms are attached to the shank, the broad palms are fixed on separately: these palms are sometimes made of sheet-iron forged to the proper shape and thickness; or of several bars laid side by side, and forged into one piece, like the bars of which the shank is made. The enormous ring by which the anchor is suspended from its cable, is attached to the upper end of the shank, where a hole is bored, or rather punched, for its reception: this hole is made by steel punches while the iron is hot; small punches being used first, and larger ones afterwards. The ring is made of several small bars welded together, drawn out into cylindrical form, put through the eye or hole in the shank, bent into the form of a ring, and the two ends welded together. When the whole of the iron-work of the anchor is put together, it is heated to a lower temperature than before, and every part is beaten with hammers of a rather smaller size than the sledge. This hammering is continued until the metal becomes black and cold; the object being to render every part as hard and smooth at the surface as possible, in order the better to resist the rusting effect of sea-water.

The anchor is now to be provided with the stock—that cross-piece (generally formed of wood) which is attached to the upper end of the shank, a little below the ring. The common form of the stock is this:—Two beams of oak are made to embrace the upper end of the shank, and are firmly united by iron bolts and hoops; these beams are about the length of the shank, their united thickness at the middle is about one-twelfth of the length, and they taper off gradually towards the two ends. The stock is kept in its place on the shank by means of two projecting nuts or iron blocks placed above and below it. The stock has been of late years frequently made of iron: in this instance it consists of a long cylindrical bar, about half as thick as the shank of the anchor; but instead of passing round the shank, as the wooden stocks do, it passes through a hole bored in the upper end of the shank. Stocks of this kind are chiefly useful where it is desirable to take them out of their places for the convenience of stowing away the anchor on board a ship. When the stock is put through the hole in the shank, it is secured there by a kind of linch-pin, which holds it securely.

It will be easily imagined that the workshop where such labours as these are carried on, must have a formidable appearance; indeed a Devonshire tourist, speaking of the anchor-smith's shop in Devonport dockyard, as it existed a few years ago, describes it as something more than formidable. "Those who are unaccustomed to places of this kind, feel strong sensations of horror at first entering. The clanking of the chains used to blow the bellows, the dingy countenances of the workmen, the immense fires, and above all, the yellow glare thrown on everything by the flames shining through the dismal columns of smoke that continually fill the building, form altogether a very terrific picture." The improved machinery now employed is very likely to rob such a scene of many of its disagreeable features.

DRUIDICAL REMAINS.—No. IV.

[Concluded from No. 537.]



[Harold's Stones, Trelech, Monmouthshire.]

In this our concluding paper, we have to notice the cairns, or heaps of stones, and the stones erect, or rude pillars, the only classes of Druidical remains that have not hitherto engaged our attention. The cairns are frequently mentioned in Scripture, and in every instance, when not accompanied with a pillar, we find them raised with the same object, namely, to cover the remains of those who died in crime, and whose memories it was intended to dishonour. Such were the heaps of stone raised over the remains of Achar, the king of Ai, and Absalom. In Syria and Palestine it is still usual for one who passes such a heap to throw a stone on it, in order to express his detestation of the infamy commemorated, as well as to contribute to the maintenance or increase the size of the monument. In Scotland, too, in some parts, it was formerly, and perhaps still is, common for a person offended to say to the offender, "Never mind, I shall throw a stone on your cairn yet." Many of the cairns in this country have been opened, and generally found to contain undoubted evidences of human interment; and where this was not the case, their absence may be very reasonably accounted for by the supposition that the body was burned (as in the instance of Achar), and the stones heaped over the ashes.

Of the stones erect, it may be at once stated, in the words of the editor of the 'Pictorial Palestine,' that "taken generally, they were *stones of memorial*." They were the earliest records of all great or highly interesting

events—religious manifestations or covenants, important treaties or victories, the deaths of distinguished or dearly-beloved persons, the settled boundaries of estates, were all recorded in this simple, but for the time, no doubt, sufficient manner. The first historical notice bearing directly upon the subject is the Scriptural mention of stone set up by Jacob to commemorate his vision. The size of this stone was necessarily small, like perhaps those ancient stones dispersed about our own country, three or four feet high, and whose history lies too far back even for the reach of tradition. We may also mention the stone set up by Joshua under the oak of Shechem, a little before his death, when he made the Israelites once more solemnly renew their covenant with God. In the first book of Samuel, chap. vi., v. 15, 18, a stone of great magnitude is referred to, on which the ark of God rested on its return from the land of the Philistines, and which was previously well known as the great stone of Abel. The solemn treaty of peace concluded between Jacob and Laban was marked by the addition of a heap of stones to the rude pillar, a circumstance, however, that is not mentioned in the Sacred writings in such manner as to lead to the inference that any new custom was instituted. In Great Britain we have to this day similar monuments. At Boswen's Croft, Sancred, in Cornwall, is one in particular, "which answers so exactly to that which the description would suggest that Jacob and Laban had erected, that if it had been found in the country beyond Jordan, travellers would probably have concluded it to be the same."*

The custom of setting up large stones to commemorate victories, we find, from the Sacred writings, was also in use among the Hebrews. The Ebenezer, or "stone of help," set up by Samuel, is an instance of this nature. In the British Isles the custom appears to have been not only common, but to have continued down to a late period. Thus we find Malcolm, son of Kenneth, king of Scots, commemorating his victory over the Danes in this mode in 1008. Near Newbridge, in the county of Cork, Ireland, are three large stones set edgeways towards each other, which are said by an uncontrovertible tradition to refer to a battle fought on the spot between Brian Boiruma, king of Munster, and the O'Mahonies of Carbery, assisted by the Danes, most of whom were slain. To this origin doubtless may be referred many, if not all, of the large stones isolated from Druidical remains, and dispersed in different parts of the country. We may particularise the three stones called Harold's Stones (represented in the engraving at the head of this article), which stand in a field at Trelech in Monmouthshire, the highest of which is about fourteen feet; and the similar stones, called the Devil's Arrows, near Boroughbridge, which are, however, larger and wider apart than the three stones known as the Devil's Quoits, which formerly stood near Stanton Harcourt in Oxfordshire. The history of all these is unknown: we may add that it is a curious circumstance to find the number and general arrangement of these stones should be the same in so many instances.

With regard to sepulchral stones, we may observe that it was not usual with the Hebrews to bury their dead in isolated places where a memorial stone would be needed, large excavated family sepulchres being general; but when cases occurred that it became necessary to inter distinguished persons at a distance from the resting-places of their fathers, the rude pillar was then set up to mark the place. It was under circumstances of this nature that Jacob set up a stone over his beloved Rachel. Among some of the nations of antiquity the custom was very general: the Greeks, for instance, had for ages no other funeral monuments than a rough unhewn stone set upon the top of a tumulus. In the 'Iliad' we find Paris, whilst in the act of using his bow against the enemy, bending behind the pillar placed on the tumulus that contained the ashes of Ilus, the son of Dardanus, the ancient king of Troy. Minutely corresponding with this monument is the one at Castle More, near Tullagh in Ireland. It consists of a tumulus thirty feet in perpendicular height, with a square stone on the top about five feet in height: on one side are appearances of an entrance into a cave beneath. We have one positive and interesting case on record of the erection of a vast monument of this kind. Harold, the son of Gormon, employed his whole army and a vast number of oxen to draw a stone of enormous size from the shores of Jutland to be placed over the grave of his mother.* We may observe that our own churchyards to this day present but a modification of the usages we have described: in the mound and headstone we still see the tumulus and pillar of ancient times.

The following engraving represents an existing monument of the period when the rude sepulchral and other pillars we have described began to give place to works of a more strictly architectural character. These pillars are situated near Tartous and the Isle of Aradus in Syria, and are supposed to have been built by the Phœnicians.

The use of stones erect for marking boundaries must be

* 'History of Palestine,' b. iii., p. 358.

* Wormii, 'Mon. Dan.,' p. 39.

[Monumental Pillars near Tartous in Syria.]

very ancient; perhaps, indeed, this was one of the earliest purposes to which such rude monuments were applied. Every one will remember the fearful denunciation in the book of Deuteronomy, "Cursed be he that removeth his neighbour's land-mark:" another interesting notice of this custom is given in the 'Iliad,' where Homer, speaking of the great stone thrown by Minerva at Mars, says, as King renders the passage,* that "she, retreating, seized in her strong hand a stone lying in the field—black, rough, and vast—which men in former times had placed as a boundary of cultivated land." How long and how effectually this custom existed, Olaus Magnaus, archbishop of Upsall and metropolitan of Sweden, speaking of his own parts, about the middle of the seventeenth century, bears testimony with justifiable pride: "There are also high stones, by the aspect and signature whereof the ancient possessions of provinces, governments, forts, communities of noble and country men, are suffered to continue to every man in peace, without laws, suits, or arbitration, giving an example to other nations, that among these nations there is more right to be found in these stones that are boundaries, than elsewhere in the large volumes of laws, where men think themselves to be more learned and civil."†

A monument frequently associated with cromlechs in the centre of the Druidical circle is a large block or upright stone, which Toland supposes was the pedestal of an idol, and other antiquarians agree in the hypothesis. According to Al Jannabius, many of the ancient gods of the Arabians were no other than large rude stones, the worship of which the posterity of Ishmael had first introduced. "To us it seems most probable that these great stones were the first places of divine worship among the Arabs, on which they poured wine and oil, as Jacob did upon the stones that served him for a pillow when he saw his vision. Afterwards they might worship these stones themselves, as the Phœnicians in all probability did."‡ Whatever might have been the religious uses of these stones in our country, their civil was, it appears, to mark the station of the chief person in any important public assemblage, and was chiefly used for inaugurations. In some cases the stones are such as the person to be inaugurated might stand or sit upon; in others the form shows that they were intended merely to mark the spot at which he was to stand or sit. In the Western Islands, where, from their sequestered situation, old customs existed longer than in England, remains of the crowning or inauguration stone are still found. In the Isle of Isla there was fixed a large stone seven feet square, in which was a cavity, or deep impression, to receive the feet. In this cavity Macdonald stood when he was crowned King of the Isles, and thus standing, swore to continue all his vassals in the possession of their lands, and to render exact justice to all his subjects, &c. Stones thus bearing the impress of feet are found in different parts of the world, and the use of erected stones for the purposes of inauguration is frequently mentioned in Scripture. A very interesting remain of this description is preserved under the chair in which our sovereigns are crowned. "This is supposed to be the same stone on which the supreme kings of Ireland were to be inaugurated in the times of heathenism on the hill of Tarah. It was a persuasion of the ancient Irish, that one of their blood should reign in whatever country this stone remained. Hence it was sent to confirm the Irish colony in the north of Britain, where it always continued to form the coronation chair of the Scottish kings, until it was removed by our Edward I. from Scone, and placed under the coronation chair in Westminster Abbey, where it has ever since remained, being, as Toland observes, 'the ancientest respected monument in the world; for although some others may be more ancient as to duration, yet thus superstitiously regarded are they not.'"*

* 'Munimenta Antiqua.'

† 'A Compendious History of the Goths, Swedes, Vandals, and other Northern Nations,' 1658.

‡ 'Ancient Univ. History,' xviii., 387.

SKETCHES OF THE COASTS FROM SINCAPORE TO PEKIN.

VII.—The Island of Formosa.

[Continued from No. 537.]

We have already more than once alluded to the circumstance of the province of Fo-kien being overpeopled, and the necessity it is under of continually sending forth emigrants to various quarters of the Indian Archipelago. One of the principal places to which this tide of population flows is the beautiful island of Formosa, where nature seems to have combined almost everything calculated to tempt and to reward immigration. The passage of the Chinese thither is, however, impeded as well by the high seas which constantly prevail in the channel, as by the express prohibitory edicts of the emperor. These have been occasioned equally by the natural dislike of of the Celestial government to movement of any kind (even to the healthy circulation of its subjects within the limits of its own dominions) as by the foresight of the real danger which the increasing population of Ty-o-an, or Formosa, is likely to prove. In fact ever since the Tartars first possessed themselves of this island, its history has been a series of constantly recurring attempts on the part of the people to throw off their allegiance, and of open struggles or insidious policy on that of the conquerors to keep them down. In fact money secretly lavished and promises made underhand to corrupt leaders, have been the real, whilst the large army kept up is the ostensible, means of subduing the insurgents; who indeed might scorn all military endeavours, for the loftiness and ruggedness of its mountains, the depth and intricacy of its forests, and the number of unconquered villages that lie in the east, would afford inaccessible retreats.

Notwithstanding the near proximity of this island to the coast of China, it is supposed never to have been discovered by that nation until about the year 1430, when a eunuch returning from a western voyage was driven on its shores by a furious tempest. He appears to have carried home flattering reports to his countrymen, who, however, did not attempt to profit by the discovery until nearly two centuries afterwards, not very much anterior to the Tartar conquest. At first their situation on its shores was very equivocal, for they seemed to linger there rather by sufferance than from any supposed power or acknowledged right of occupation. About this time, however, they exerted an act of sovereignty by making over a certain portion of the island to the Dutch, or at least granting them permission to erect a fort at Ty-o-an, which came to pass in the following manner:—

The Dutch wishing, in 1629, to annoy the Spaniards in their tradings from Manilla to Macao, sent out a fleet to build a fort upon the Viscadore Islands, lying nearly midway between Formosa and the mainland. This they effected, and manned it with twenty pieces of cannon; but not by the labour of their own hands, for in order to make the work progress more vigorously, they kept cruising about and seizing all the Chinese ships that they could find, the crews of which, to the number of fifteen hundred, they employed in constructing the fort.

Meanwhile the Dutch were in treaty with the Chinese admirals, who hung about with a fleet of twenty sail. After some time had been spent in negotiations, a proposal was made that the Europeans should quit the Viscadore Islands, and retire to Formosa, in which case the mandarins promised to pretend to be ignorant of their presence. With this proposal the Dutch, flushed with success, at first refused to comply, and sent as an answer eight vessels to plunder the coast, in which expedition

* 'History of Palestine,' b. iii., c. 4, p. 435.

they succeeded without any opposition, and obtained many prisoners, one of whom they dispatched to the Chinese officers with new proposals for a free trade. This was promised on condition of the Dutch retiring from the Viscadores, which they again refused to do, and accordingly the negotiations proved once more ineffectual.

But the Chinese now proceeded to take more vigorous measures. They sailed from Amoy with a hundred and fifty junks, and landing an armed force of four thousand men on the principal island, raised a fort within two leagues of the Dutch stronghold. This alarmed the intruders, and the third time the negotiations were attended with success, and the Dutch agreed to retire to Ty-o-an, where they built Fort Zealand, the stones for which were brought by the Chinese themselves from the continent in junks, and the trade was opened upon advantageous terms. This prosperity did not, however, long continue. The Tartars entered China; and the Dutch were at first undetermined as to whose cause they should espouse. They hesitated, and the Tartar triumphed. To him then they offered their services, but, as is well known, paid dearly for it; for the popular admiral Koshinga, stirring up the people, and collecting a great naval force, overpowered the bewildered garrison, expelled them from the island, and erected himself as an independent sovereign, ere the phlegmatic directors at Batavia could form any plan of defence, or come to any resolution whatever. Since that time the island has again been united to the empire, but is held by a very precarious tenure, as the inhabitants are extremely hostile to the Tartar dynasty. They are in fact ready to receive with open arms any invader who will guarantee to them the enjoyment of their own municipal laws and domestic customs. They have never forgiven the Mantchoos the wanton or politic, but at any rate arbitrary, changes made in their customs; and no insult is so long remembered as one which affects every member of the community. To introduce arbitrary innovations in a trivial matter may break the spirit of a sensitive people, if they do not repel the attempt indignantly at the moment; but with a nation of the long-remembering hatred of the Chinese, the experiment, though it may have been judged necessary, was a dangerous one, and it has certainly not produced the desired effect.

The means at first resorted to for restraining the discontented spirits of Fo-kieu from passing over to this island were passports of exceedingly difficult access; but this proving useless, an entire yet equally ineffectual prohibition succeeded.

It may not be uninteresting to remark that Formosa was not formerly unvisited by English merchants, and that in 1623 the Chinese ambassador at Batavia offered the English, as well as the Dutch, an establishment at Ty-o-an, which, after some negotiation, was accepted, and a British factory seems to have flourished for a few years; but the conquest of the Tartars, and the wars with Koshinga, whose party the English merchants espoused, entirely spoiled their prospects, and when the island was finally annexed to China, they were so tormented and harassed with taxes, detentions, and other vexatious proceedings, that in 1689 the factory was withdrawn, and the Court of Directors wrote to Madras, saying, "Ty-o-an is good for nothing now; and we would not have you settle any factory there again."

The Viscadores form a small cluster of thirty-six islands, chiefly valuable, however, as a commercial or naval station. Large tracts are totally destitute of all vegetation; so much so indeed, that Van Mailla asserted that when he visited them he saw only one stunted tree, and a few bushes scattered here and there on the sandy hillocks. But other quarters abound with inhabitants, and numerous herds of cows, which feed on the somewhat rank grass with which the meadows abound. There are here also great multitudes of birds, especially a fine species of cocks; and the ground produces potatoes and many kinds of fruits. During the rainy season the inhabitants gather fresh-water in cisterns and pools. The port is very good, lying between two islands, with an opening north and south. On the eastern side stands a town and a fort, built on the same site as that formerly erected by the Dutch, and still remembered as the "Fort of the Red-Hairs." In the town itself resides a mandarin, whose duty it is to inspect the vessels that pass to and fro between Formosa and the continent.

The city of Ty-o-an lies about forty or fifty miles to the south-east of the Viscadores, and is protected from the sea by a long narrow island that extends in front of it. The harbour is spacious but shallow, and the entrance is so difficult that it is comparatively of little importance. There were formerly two openings, but one is now impracticable. The other is commanded by a tolerable fort, and a large garrison is continually kept under arms. The governor is a mandarin of high rank, who bears the title of supreme governor of Formosa, though in fact even now the Chinese authority does not extend over above one half, that is, the western side of the island; the other is divided off by a long ridge of mountains rising to a great height, and covered by thick and almost impenetrable forests; and in these, and on the eastern shores, the rivers, and the lakes, yet untamed savages wander in the naked simplicity of nature, with their canoes and lances, and bows and arrows. These it was who gave such a rough reception to the fugitive Benyowski and his crew, a reception perhaps warranted by ill-treatment, and veiled over from the usual motives that cause men to seek pity for themselves by shrouding the wrongs they have committed against others. However this may be, the usual acquired superiority of the Europeans manifested itself in dreadful massacres, and the natives had reason to look with distrust on any future attempt at exploring the country. This probably has been one of the principal reasons of the eastern coast of Formosa being so little known to the Europeans, as well as to the Chinese.

There is a tradition that the latter people, in an expedition which they made to the back of the island, also gave the inhabitants warning of their cruel and rapacious appetites; for incited by the reports of gold and silver mines which prevailed long before the Chinese had mastered any portion of the coast, a number of adventurers sailed thither with a junk on a voyage of discovery; and on landing were treated by the natives with distinguished kindness. No trace of mines appeared, save a few ingots of gold carelessly scattered about some of the cottages as if of no value. These, however, provoked the cupidity of the Chinese, and accordingly having succeeded in intoxicating their hosts, a general slaughter ensued; with their miserable and blood-stained profits they then returned to the junks and sailed back to their own ports.

If, however, cupidity has been disappointed in the hope of the existence of mines (of the precious metals at least, for white and brown copper and pit-coal are frequent in the mountains), honest merchants have reaped the benefit of the possession of the island. The capital is at present a large and opulent city, carrying on an extensive commerce, and containing in its bazaars, shops, and warehouses, every article of use or luxury which is prized in that quarter of the world. The island itself furnishes rice, sugar, sugar-candy, tobacco, linen, hemp, and the bark of certain trees used in various manufactures.

From abroad are brought varnishes, porcelain, European commodities, and silk. Of the latter little is manufactured in the island, for the cultivation of mulberry-trees has hitherto been very much neglected. The soil, however, is favourable, and industry might effect much.

All these articles and many more are sold in long streets, covered with awnings during seven or eight months in the year on account of the excessive heat. Extensive ranges of shops flank these on either side, in which a tasteful arrangement of the various articles

offered for sale not only tempts purchasers, but renders the bazaar an agreeable promenade. The general acknowledgment, however, of this latter fact congregates crowds that sometimes become disagreeable, and besides the galleries are not paved with sufficient care and attention to comfort or cleanliness.

In addition to the articles above mentioned, smoked venison is much sought after, and very plentiful. Indeed stags and monkeys, which make their appearance in troops, are perhaps the only wild quadrupeds on the island; for if there exist any bears, wild boars, wolves, or tigers, it must be in the eastern mountains, for they are never heard of on the plains. Nor are the tame animals more numerous, which may perhaps be accounted for from the comparative late occupation of the country by a civilised race. Sheep, goats, pigs, and even horses and asses, are very rare, it being there the custom for oxen to serve the purposes to which these two latter animals are applied in other countries; and we will venture to assure our readers that a mandarin on the brawny back of a well-fed ox would make no contemptible figure, especially as the furniture is generally very rich, were it not for the ludicrous gravity of the one and the well known harmlessness of the other.

In spite of the mountainous character of the inland scenery, there are towards the shores on either side vast plains and lowlands, divided into rice-fields or orchards. The latter produce bananas, oranges, mangosteens, cocoanuts, pomegranates, figs, &c., with European fruits, introduced by the Dutch, such as apricots, peaches, chestnuts, and grapes. A fine species of water-melon makes up in some measure for the extreme insalubrity of the water. The evil qualities of the latter will perhaps prove the most considerable obstacle to any European settlement on this island: the only water as yet known which is tolerable is that of the capital, which the mandarins were careful to supply to the Jesuit missionaries, by sending it in cart-loads to their habitations. It may also be remarked that the island abounds with sulphur, and that earthquakes are exceedingly frequent.

The trees above mentioned, with the tobacco and sugar plantations, and the deep green patches of rice (of which there are in some places two harvests in the year), give to the lowlands of Formosa the character rather of a large pleasure-ground than a mere agricultural country. Indeed all accounts agree in testifying to the justness of the name applied to it by the Portuguese navigators, for it may really be called "The Beautiful Island."

We miss, however, the usual characteristic of an Eastern country, in the extreme meagreness of the list of native birds. True it is that fowls, ducks, and tame geese are numerous about the farm-houses, but those richly adorned birds that generally deck the branches of the forests of the Indian Archipelago and of China are here extremely rare. Pheasants, woodcocks, and pigeons are almost the only birds mentioned, and though others doubtless may exist, this complaint has been general among travellers.

The rivers that water this island are numerous, and their woody embouchures add an additional feature to the rich landscape of the coast. Fish of all kinds abound therein, as well as in the lakes which occur here and there in the interior.

Before we conclude this part of our subject, it may not be amiss to give some account of the manners of the aboriginal inhabitants, especially as circumstances have taken place and others may occur to render whatever has any connection with this island extremely interesting to the British people.

The Formosans generally bear the character of excessive shyness towards strangers, but are at bottom of a good disposition. War, however, is their delight. Whenever the nature of the country permits, they are continually making forays, not only upon their neighbours, but also upon very distant villages. Embarking in canoes, they drop down along the coast, and falling upon some unprepared community, massacre every person they can find, man, woman, or child, sparing none; for there is no greater honour among these people than to be able to show the head of an enemy preserved in the same manner as is the scalp among the North American Indians.

Each village was formerly entirely independent of the other; but by degrees, as is usual amongst nations addicted to war, and where life and property are unsafe from frequent incursions, kings have assumed a certain authority, and now wage war for their territorial rights, the satisfaction of their own ambition, thirst of conquest, or other political motives, with the same arts and the same weapons as their more simple ancestors did for mere plunder.

Hunting fills up the interval left unoccupied by contention, or else lazy inaction in their huts. For here the men, as in several other barbarous countries, leave to the other sex the care of cultivating their fields. To the women also is confided the task of fishing for lobsters, oysters, or prawns, which form their favourite dish, next after rice, their staple production, and commonest as well as most admired article of food.

When a young man wishes to marry, he goes with music and song to court his lady before her own hut, and when by these means he has won her affections, leaves his father's house, and dwells in that of his father-in-law; for which reason daughters are more prized than sons, who there forsake their parents as soon as they come to a marriageable age; but the former only bring an increase of family, and consequently of riches and honour, since there are then more hands to wield the spear in the chace or the field.

The houses of the Formosans are larger than savages commonly take the trouble to build, and are of very elegant form, being raised each on a little mound, having a door corresponding to the four cardinal points of the heavens. The ornaments, both within and without, are deer and boar heads; and along the walls are generally hung their various implements both of war and peace. Their clothing is commonly of Chinese stuffs (for which they give in exchange the skins of the animals they kill in their hunting parties), or of a kind of cloth of their own manufacture woven of dog's hair.

They have no appointed day of rest, but have several religious festivals, at which they take occasion to enjoy themselves. They believe in the immortality of the soul, in future rewards and punishments, and have certain priestesses, who are as much feared and respected as was of yore the Delphian Pythoness. It should be remarked, however, that the punishments of a future life are directed rather against arbitrary offences, such as catching oysters out of season, disregarding the warnings given by the songs of birds, than against real crimes, as adultery, drunkenness, &c. Their gods have particular dwellings assigned them: for example, the principle of evil dwells in the north; of good, in the south; and in the east, the consort of the latter, who ever and anon growls in thunder, to bid her worse half be less sparing of his rain, or to water the fields of her good friends the Formosans.

Revenge.—Revenge is a kind of wild justice, which the more man's nature runs to, the more ought law to weed it out: for as for the first wrong, it doth but offend the law, but the revenge of that wrong putteth the law out of office. Certainly, in taking revenge, a man is but even with his enemy; but in passing it over, he is superior.—*Lord Bacon's Essays.*

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